AMENDMENTS TO THE CLAIMS

1. **(Currently Amended)** A pulse arc welding control method in which a peak current and a base current of a welding current are alternately supplied in a form of a pulse between a welding wire and a welding base material, the method comprising:

storing a relationship between a lapse of time from a short circuit of the welding wire and the welding base material and a gradient of the welding current, the gradient being smaller than a gradient at a pulse rise of a current waveform of the pulse;

detecting [[a]] the short circuit between the welding wire and the welding base material;

applying [[a]] the welding current having [[a]] the gradient smaller than [[a]] the gradient at [[a]] the pulse rise of [[a]] the current waveform of [[a]] the pulse ~~current~~ on detecting the short circuit; and

decreasing the welding current so as to sharply fall vertically on detecting a neck that appears just before recovery from the short circuit,

wherein a length of time elapsed from occurrence of the short circuit is obtained, and the gradient of the current waveform in a short-circuit condition is controlled according to the length of time elapsed from occurrence of the short circuit based on the relationship stored,

wherein the longer the time elapsed from occurrence of the short circuit, the greater the gradient of the current waveform applied in the short-circuit condition.

2. **(Previously Presented)** The pulse arc welding control method of claim 1, further comprising a step of increasing the welding current on detecting the recovery from the short circuit, after the step of decreasing welding current in response to the neck detection just before the recovery from the short circuit.

3. **(Currently Amended)** The pulse arc welding control method of claim 1, wherein the welding current is decreased on detection of the short circuit between the welding wire and the welding base material, and then the current having the gradient smaller than the gradient at the pulse rise of the current waveform of the pulse ~~current~~ is applied.

4-5. **(Canceled)**

6. **(Previously Presented)** The pulse arc welding control method of claim 1, wherein an output voltage is detected, and the gradient of the current waveform in the short-circuit condition is controlled according to the output voltage.

7. **(Currently Amended)** A pulse arc welding device in which a peak current and a base current of a welding current are alternately supplied in a form of a pulse between a welding wire and a welding base material, the device comprising:

a switching element for controlling welding output current;

a welding current value detector for detecting welding output current;

a welding voltage value detector for detecting welding output voltage;

an arc short-circuit judging section for judging whether a welding state is in a short-circuit period or in an arc period;

a setting section for defining parameters used for the short-circuit period and the arc period;

a pulse-waveform circuit section for controlling pulse output in the arc period according to at least any one of outputs from the welding current value detector, the welding voltage value detector, and the setting section;

a dip-waveform circuit section for controlling output in the short-circuit period according to at least any one of outputs from the welding current value detector, the welding voltage value detector, and the setting section, the dip-waveform circuit section setting the welding current to have a gradient smaller than a gradient at a pulse rise of a current waveform of the pulse when the arc short-circuit judging section judges a welding state is in a short-circuit period;

a secondary control section for sharply decreasing the welding current from a point of the increased gradient so as to sharply fall vertically on detecting a moment at which a tip of a wire has a neck just before recovery from a short-circuit, according to at least any one of outputs from the welding current value detector, the welding voltage value detector, and the setting section; and

a driving section that selects from outputs of the pulse-waveform circuit section, the dip-waveform circuit section, the secondary control section according to a signal from the setting section and an output from the arc short-circuit judging section, and sends the selected data to the switching element,

wherein the setting section stores a relationship between a lapse of time from the short circuit and the gradient value of the welding current, and the dip-waveform circuit section sets the gradient value based on the relationship stored in the setting section.

8. **(Currently Amended)** The pulse arc welding device of claim 7, wherein the secondary control section decreases the welding current on detecting a moment at which a tip of

a wire has a neck just before recovery from a short-circuit, and then increases the welding current on detecting recovery from the short-circuit.

9. **(Currently Amended)** The pulse arc welding device of claim 7, wherein at an occurrence of [[a]] the short circuit, the secondary control section sharply decreases the welding current according to a signal from the arc short-circuit judging section.

10. **(Currently Amended)** The pulse arc welding device of claim 7, wherein the setting section measures a length of time elapsed from occurrence of [[a]] the short circuit according to the signal from the arc short-circuit judging section, and controls [[a]] the gradient of [[a]] the current waveform in a short-circuit condition according to the length of time elapsed from occurrence of the short-circuit.

11. **(Previously Presented)** The pulse arc welding device of claim 10, wherein the setting section performs output control so as to increase a steepness of the gradient of the current waveform in the short-circuit condition as the length of time elapsed from occurrence of the short-circuit increases.

12. **(Currently Amended)** The pulse arc welding device of claim 7, wherein the setting section changes the gradient of the current waveform in ~~the~~ a short-circuit condition according to the welding output voltage from the welding voltage value detector.

13. **(Currently Amended)** The pulse arc welding device of claim 7, wherein the setting section defines a lower limit of the welding current when the welding current is sharply decreased.

14. **(Currently Amended)** The pulse arc welding control method of claim 2, wherein the welding current is decreased on detection of the short circuit between the welding wire and the welding base material, and then the current having the gradient smaller than the gradient at the pulse rise of the current waveform of the pulse ~~current~~ is applied.

15. **(Canceled)**

16. **(Previously Presented)** The pulse arc welding control method of claim 2, wherein the longer the time elapsed from occurrence of the short circuit, the greater the gradient of the current waveform applied in the short-circuit condition.

17. **(Previously Presented)** The pulse arc welding device of claim 8, wherein at an occurrence of a short circuit, the secondary control section sharply decreases welding current according to a signal from the arc short-circuit judging section.

18. **(Currently Amended)** The pulse arc welding device of claim 8, wherein the setting section measures a length of time elapsed from occurrence of [[a]] the short circuit according to the signal from the arc short-circuit judging section, and controls [[a]] the gradient of [[a]] the

current waveform in a short-circuit condition according to the length of time elapsed from occurrence of the short-circuit.

19. **(Previously Presented)** The pulse arc welding device of claim 18, wherein the setting section performs output control so as to increase a steepness of the gradient of the current waveform in the short-circuit condition as the length of time elapsed from occurrence of the short-circuit increases.

20. **(Currently Amended)** The pulse arc welding device of claim 8, wherein the setting section changes the gradient of the current waveform in ~~the~~ a short-circuit condition according to the welding output voltage from the welding voltage value detector.

21. **(Previously Presented)** The pulse arc welding device of claim 8, wherein the setting section defines a lower limit of welding current when the welding current is sharply decreased.